

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN THE APPLICATION OF:

JOSEPH JAMES KEENAN ET. AL.

CONFIRMATION NO.: 1657
CASE BA9309USPCT
NO.:

APPLICATION 10/524807
NO.:

GROUP ART 1616
UNIT:

FILED SEPTEMBER 09, 2003
:

EXAMINER: SULLIVAN,
DANIELLE

FOR: PROCESS FOR PREPARING PASTE-EXTRUDED SULFONAMIDE
COMPOSITIONS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF

This is an appeal from the last decision of the Examiner as presented in an Office Action dated May 22, 2008 (the "Office Action") rejecting claims 1 through 37 (all pending claims). A Notice of Appeal was filed (along with a petition for a one month extension of time) electronically on September 22, 2008.

Please charge the Appeal Brief fee of \$540.00 pursuant to 37 CFR 41.20(b)(2) to Deposit Account No. 04-1928 (E. I. du Pont de Nemours and Company). If this fee amount is insufficient or incorrect, please charge any additional fees which may be required or credit any overpayment to Deposit Account No. 04-1928.

I. REAL PARTY OF INTEREST.

The real party of interest in this appeal is E. I. du Pont de Nemours and Company, as confirmed by an assignment relating to application PCT/US03/28256 recorded in connection with this application on April 27, 2005 at the Assignment Division of the U. S. Patent and Trademark Office at Reel/Frame 015955/0431.

II. RELATED APPEALS AND INTERFERENCES.

No related U.S. appeals or interferences have been noted.

III. STATUS OF CLAIMS.

Claims 1 through 37 are pending. Claims 1 through 37 have been rejected, and the rejection of all of these claims is being appealed. A copy of claims 1 through 37 is appended hereto as a CLAIMS APPENDIX.

IV. STATUS OF AMENDMENTS.

In an Amendment for this application dated January 28, 2008, the specification was amended to insert certain priority information and claims 18 through 37 were added. Claims 18 through 37 are included in the CLAIMS APPENDIX.

V. SUMMARY OF CLAIMED SUBJECT MATTER.

Applicants have briefly disclosed by way of background that sulfonamide herbicides can be formulated as concentrates in a variety of different forms, including liquid compositions such as emulsifiable concentrates and solid compositions such as wettable powders and granules; and that water-dispersible granules can be manufactured by a variety of processes including fluid-bed granulation, pan granulation, spray drying, intensive mixing, compaction, paste extrusion and heat extrusion (see page 1, line 12 – page 2, line 11).

A process for preparing a paste-extruded sulfonamide herbicide composition is claimed. The claimed process comprises (a) preparing a mixture comprising (i) from 2 to 90% by weight on a water-free basis of one or more active ingredients comprising at least one sulfonamide herbicide free acid; (ii) from 0 to 95% by weight on a water-free basis of one or more additives selected from the group consisting of wetting agents, dispersants, lubricants, anticaking agents, chemical stabilizers and diluents; and (iii) at least about 50 equivalent % of base selected from inorganic base equivalents having conjugate acid pK_a s at least 2.1 units greater than the highest pK_a of the sulfonamide herbicide free acid component (the sum of the weight percents of all the ingredients in the mixture totaling 100% on a water-free basis); and (iv) sufficient water to make the mixture an extrudable paste; (b) extruding the mixture prepared in (a) through a die or screen to form extrudate; and (c) drying the extrudate. (see page 2, line 34 – page 3, line 11; and Claim 1). A paste-extruded sulfonamide herbicide composition having not only excellent water dispersibility but

significantly improved spray equipment clean-out properties can be obtained (see page 3, lines 15-20).

With regard to the base, embodiments of the process claimed include those wherein the mixture comprises at least about 75 equivalent % of base (see page 6, lines 23-25 and claims 2 and 20) and those wherein the mixture comprises at least about 100 equivalent % of base (see page 6, lines 23-26 and claims 3 and 21). Embodiments claimed include those wherein the base comprises an inorganic base selected from the group consisting of sodium hydrogen carbonate, sodium hydrogen phosphate, sodium phosphate, potassium hydrogen carbonate, potassium carbonate, potassium hydrogen phosphate, potassium phosphate, sodium pyrophosphate, sodium tripolyphosphate, sodium trisilicate, sodium trimetaphosphate, sodium hexametaphosphate, sodium polyphosphate, ammonium hydrogen phosphate, lithium oxide, lithium hydroxide, lithium carbonate, sodium hydroxide, lithium phosphate, lithium metasilicate, lithium orthosilicate, potassium hydroxide, sodium metasilicate, sodium orthosilicate, and potassium pyrophosphate (see page 6, line 36 – page 7, line 9 and Claim 31; but note that Claim 31 does not include sodium carbonate which is listed at page 7, line 1); those wherein the base comprises an inorganic base selected from the group consisting of sodium hydrogen carbonate, sodium carbonate, sodium hydrogen phosphate, sodium phosphate, potassium hydrogen carbonate, potassium carbonate, potassium hydrogen phosphate and potassium phosphate (see page 7, lines 15-18 and claims 4 and 22; those wherein the base comprises an inorganic base selected from the group consisting of sodium carbonate, sodium phosphate, potassium carbonate and potassium phosphate (see page 7, lines 21-22 and claims 5 and 23); those wherein the base comprises sodium carbonate (see page 7, line 23 and claims 6 and 24); and those wherein the base comprises sodium phosphate (see page 7, line 24 and claims 7 and 25), including those wherein the sodium phosphate is in the form of the dodecahydrate (see page 7, lines 32-34 and claims 8 and 26).

With regard to the sulfonamide herbicide free acid, embodiments of the process claimed include those wherein at least one sulfonamide herbicide free acid is selected from the group consisting of amidosulfuron, azimsulfuron, bensulfuron-methyl, chlorimuron-ethyl, chlorsulfuron, cinosulfuron, cyclosulfamuron, ethametsulfuron-methyl, ethoxysulfuron, flupyralsulfuron-methyl, flazasulfuron, foramsulfuron, halosulfuron-methyl, imazosulfuron, iodosulfuron-methyl, mesosulfuron-methyl, metsulfuron-methyl, nicosulfuron, oxasulfuron, primisulfuron-methyl, prosulfuron, pyrazosulfuron-ethyl, rimsulfuron, sulfometuron-methyl, sulfosulfuron, thifensulfuron-methyl,

triasulfuron, tribenuron-methyl, trifloxysulfuron, triflusulfuron-methyl, tritosulfuron, cloransulam-methyl, diclosulam, florasulam, flumetsulam, metosulam and penoxsulam (see page 12, line 16 – page 13, line 22 and page 13, lines 27-35 and claims 10, 19 and 37, but note that claims 19 and 37 do not include metsulfuron-methyl which is listed at page 13, line 1); and embodiments wherein at least one sulfonamide herbicide free acid is selected from the group consisting of azimsulfuron, bensulfuron-methyl, chlorimuron-ethyl, chlorsulfuron, ethametsulfuron-methyl, flupyrsulfuron-methyl, metsulfuron-methyl, nicosulfuron, rimsulfuron, sulfometuron-methyl, thifensulfuron-methyl, tribenuron-methyl and triflusulfuron-methyl (see page 13, lines 23-26 and Claim 11).

Combinations of sulfonamide herbicide free acid and base included amongst the claimed embodiments of the process include embodiments wherein at least one sulfonamide herbicide free acid is sulfometuron-methyl and the base comprises sodium phosphate (see page 26, lines 11-12 and claims 12 and 33); embodiments wherein at least one sulfonamide herbicide free acid is thifensulfuron-methyl and the base comprises sodium carbonate (see page 26, lines 12-13 and claims 13 and 34; and embodiments wherein at least one sulfonamide herbicide free acid is tribenuron-methyl and the base comprises sodium carbonate (see page 26, lines 13-14 and claims 14 and 35).

The claimed embodiments of the process include embodiments wherein the mixture prepared in (a) comprises from about 0.5 to about 50% by weight of a saccharide on a water-free basis (see page 28, lines 7-10 and claims 9 and 27); and embodiments wherein the mixture prepared in (a) comprises from about 0.5 to about 50% by weight of a disaccharide on a water-free basis (see page 28, lines 7-11 and Claim 32).

The claimed embodiments of the process include embodiments wherein in (a) sufficient water to make an extrudable paste is added to a solid composition comprising from 2 to 90% by weight on a water-free basis of one or more active ingredients comprising at least one sulfonamide herbicide free acid, from 0.5 to 94% by weight on a water-free basis of a saccharide, from 1 to 20% by weight on a water-free basis of surfactant component, at least about 50 equivalent % of base selected from inorganic base equivalents having conjugate acid pK_a s at least 2.1 units greater than the highest pK_a of the sulfonamide herbicide free acid component, and optionally other ingredients; the sum of the weight % of all the ingredients in the solid composition totaling 100% of a water-free basis; and at least 10% of the sulfonamide herbicide content in the solid composition being in free acid form (see page 28, lines 12-26 and claims 15 and 28).

The claimed embodiments of the process include embodiments wherein the dried extrudate is sifted (see page 30, lines 19-22 and claims 16 and 29).

The claimed embodiments of the process include embodiments wherein the mixture prepared in (a) comprises two or more active ingredients (see page 25, lines 6-8 and Claim 36).

Paste-extruded sulfonamide herbicide compositions are also claimed. These compositions are prepared by the claimed process (see page 3, lines 12-13, page 25, lines 4-5 and claims 17 and 30). Claimed embodiments of these compositions include embodiments prepared by a process wherein at least one sulfonamide herbicide free acid is selected from the group consisting of amidosulfuron, azimsulfuron, bensulfuron-methyl, chlorimuron-ethyl, chlorsulfuron, cinosulfuron, cyclosulfamuron, ethametsulfuron-methyl, ethoxysulfuron, flupyrsulfuron-methyl, flazasulfuron, foramsulfuron, halosulfuron-methyl, imazosulfuron, iodosulfuron-methyl, mesosulfuron-methyl, nicosulfuron, oxasulfuron, primisulfuron-methyl, prosulfuron, pyrazosulfuron-ethyl, rimsulfuron, sulfometuron-methyl, sulfosulfuron, thifensulfuron-methyl, triasulfuron, tribenuron-methyl, trifloxysulfuron, triflusulfuron-methyl, tritosulfuron, cloransulam-methyl, diclosulam, florasulam, flumetsulam, metosulam and penoxsulam (see page 12, line 16 – page 13, line 22, page 13, lines 27-35 and page 25, lines 4-5 and Claim 30, but note that Claim 30 does not include metsulfuron-methyl which is listed at page 13, line 1). Compositions which comprise an extruded component prepared by the claimed process and which comprise one or more active ingredients that are not sulfonamide herbicides are also claimed (see page 25, lines 6-8 and Claim 18).

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL.

1. Whether claims 1-16 are unpatentably obvious under 35 U.S.C. 103(a) when considering U.S. Patent No. 5,474,971 to Sandell in view of U.S. Patent No. 5,270,288 to Reibel et al. and U.S. Patent No. 6,268,749 to Nonomura.
2. Whether Claim 17 is unpatentably obvious under 35 U.S.C. 103(a) in light of U.S. Patent No 5,474,971 to Sandell.
3. Whether Claim 18 fails to particularly point out and distinctly claim an invention as required by 35 U.S.C. 112, second paragraph.
4. Whether claims 18-37 are unpatentably obvious under 35 U.S.C. 103(a) when considering U.S. Patent No. 5,474,971 to Sandell in view of U.S. Patent No. 5,741,157 to Sandell et al.

VII. ARGUMENT.

1. Claims 1-16 are not unpatentably obvious under 35 U.S.C. 103(a) when considering U.S. Patent No. 5,474,971 to Sandell in view of U.S. Patent No. 5,270,288 to Reibel et al. and U.S. Patent No. 6,268,749 to Nonomura.

Sandell discloses that there are a number of conventional methods for preparing water-dispersible granule compositions: (1) water-spraying in fluidized bed or pan granulation equipment (2) spray-drying (3) dry compaction and (4) extrusion of a water-wet paste (see col. 3, line 61-column 4, line 2). As indicated in its title, Sandell relates to water-dispersible granular agricultural compositions made by heat extrusion (emphasis added). Sandell describes more particularly at column 4, lines 3-7, water-dispersible granular compositions that are made by extruding a dry premix through a die or screen at elevated temperature and chopping or grinding the extruded material to form granules; and Sandell describes more particularly at column 4, lines 25-45, a process comprising extruding a dry premix having particular premix characteristics through a die or screen at certain temperatures and chopping or milling the extruded material to form uniform granules (emphasis added). Applicants submit that one skilled in the art would clearly recognize that the premix characteristics presented (and the embodiments thereof described in Sandell) relate to a premix specifically designed for the heat extrusion process described therein, and that Sandell does not suggest that the premix is considered suitable for other processes, especially other processes which are not “dry” processes such as water-spraying in a fluidized bed or pan granulation equipment, spray-drying and extrusion of a water-wet paste.

The Office Action suggests that it would have been obvious to one of ordinary skill to prepare “the composition” as a water wet extrudable paste since Sandell teaches a process for preparing extrudable water-wet pastes and drying the granules. The Office Action at one point references disclosure in the background of Sandell (column 1, lines 24-27) of an extrusion process to make water-dispersible granules of agricultural chemicals in which water is added to make an extrudable wet mix, and the extrudate is rolled to break the product down to granules and then optionally dried. At another point the Office Action references the disclosure at column 3, lines 59-62.

Applicants submit that while Sandell mentions extrusion of a water-wet paste at column 3, line 62, this mention is by way of contrast (see also column 1, lines 23-27); and that the Sandell teachings with regard to compositions made by extruding a dry premix using a heat extrusion technique are clearly not meant to apply to extrusion of a water-wet paste. Applicants note that Sandell describes at column 13, lines 13-17 a water-soluble diluent component which melts or softens at elevated temperatures and acts as the primary extrusion aid; and that Sandell further describes at column 13, lines 36-48 the use of heat-activated binders capable of acting as a binder and extrusion aid when heat is applied. Applicants submit that one of ordinary skill in the art would understand from Sandell that components such as these would aid in developing the texture suitable for the heat extrusion. Accordingly, Applicants submit that rather than concluding that water should be added to the dry premix used in the Sandell process to improve texture as suggested in the Office Action, one of ordinary skill in the art would instead conclude that the addition of water to provide a water-wet paste suitable for use in paste extrusion would be detrimental to the preparation of the premixes to be used in the heat extrusion process taught in Sandell. Indeed, Applicants note that the Abstract of Sandell states “No water is added in the process thereby eliminating the need for drying”.

The Office Action noted that the active ingredients disclosed as suitable in Sandell includes certain sulfonamides such as sulfometuron-methyl (Compound No. 63 at column 10 was noted); and that Sandell taught sodium and ammonium phosphates and sodium and potassium carbonates as optional additives/anticaking additives/gas generating agents (column 14, lines 24-26 and 39-40 were noted).

Applicants respectfully submit that even in light of these disclosures in Sandell, Sandell does not generally teach that one should choose one of these optional additives when the active ingredient is a sulfonamide herbicide acid. In other words, Applicants submit that these disclosures in Sandell do not fairly suggest the combination of sulfonamide herbicide free acid with base.

Moreover, as discussed above, Applicants have disclosed and claimed a process which involves, in part, preparing a mixture which comprises amongst its claimed components a sulfonamide herbicide free acid component and an advantageous amount (at least about 50 equivalent % in Claim 1) of base selected from inorganic base equivalents having conjugate acid pK_a s at least 2.1 units greater than the highest pK_a of the sulfonamide herbicide free acid component. Applicants submit that Sandell does not disclose or suggest this advantageous combination. Although there are sulfonylurea herbicides listed

among the active ingredients in Table 1 of Sandell, Applicant submits that Sandell does not fairly suggest adding an advantageous amount of base selected from inorganic base equivalents having conjugate acid pK_a s at least 2.1 units greater than the highest pK_a of any sulfonamide herbicide free acid component which might be used in the Sandell invention. Indeed, Applicants note a complete reading of the entire paragraph of column 14, lines 37–41 teaches the optional use of gas producing disintegrants for faster breakup of the granule in water, and combinations of sodium and potassium bicarbonates and carbonates with acids such as citric and fumaric acid as examples of suitable gas generating additives. Applicants submit that there is no suggestion of adding a suitable base in an advantageous amount relative to a sulfonamide herbicide free acid component. In addition, Applicants submit that one of ordinary skill would clearly not conclude from Sandell that these gas generating additives should be used in a water-wet paste prior to extrusion.

Applicants note that examples 5 and 6 in Sandell use the sulfonylurea metsulfuron-methyl (listed by its chemical name) and sodium bicarbonate, and that (using Tables A and B at pages 4 and 5 of the present specification) sodium bicarbonate has a single pK_a (6.4) that is at least 2.1 units greater than the pK_a of metsulfuron methyl (3.3). However, Applicants also note that in both examples there are about 0.136 moles of metsulfuron-methyl per 100 grams of premix (52 g divided by 381.4 g/mole) and about 0.0179 moles of sodium bicarbonate per 100 grams of premix (1.5 g divided by 84.0 g/mole); and thus only about 13.2 equivalent percent of sodium bicarbonate ($0.0179/0.136 \times 100$). Moreover, Applicants note that in both examples citric acid is also used, and Sandell clearly indicates that the combination of sodium bicarbonate with citric acid is a gas-producing combination that promotes breakup in water (see column 14, lines 37-42). Applicants submit that the use of sodium bicarbonate as a component in a gas-generating additive for faster breakup in water exemplified in examples 5 and 6 of Sandell is one which would be avoided in the preparation of water-containing paste for paste extrusion.

Furthermore, Applicants note that the heat extrusion process of Sandell involves ingredients that soften and/or melt at elevated temperatures (see e.g., column 13, lines 13-58) and generally involves cooling and hardening (see e.g., column 5, line 2). Applicants submit that this interaction of diluent and/or binder with any other ingredients (including actives) during heat extrusion clearly results in a product having attributes derived from that process.

The Office Action, referencing KSR International Co. v. Teleflex Inc.,⁸² USPQ2d 1385 (U.S. 2007), suggests that it would have been obvious to try

adding water to soften the paste instead of heating it since it would require less energy than heating and is a common method of extrusion. Applicants submit this bare assertion clearly does not fairly analyze the motivations with regard to formulation. For example, even with regard to energy considerations, Applicants note that the present process for preparing a paste–extruded sulfonamide composition includes drying the extrudate, an aspect that can itself require considerable energy (see page 30, lines 6-18). Indeed, Sandell points out that wet-extrusion requires a drying step (e.g., at column 4, line 2) and that the advantages of the Sandell process include no need for drying (e.g., at column 4, line 14). Moreover, it is impermissible within the framework of Section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. See In re Wesslau 147 USPQ 391, 393, 353 F2d 238 (CCPA 1965) and Bauch & Lomb v. Barnes-Hind/Hydrocurve, Inc. 230 USPQ 416, 796 F2d 443 (Fed. Cir. 1986). In this instance, the bare assertion of obviousness in the Office Action based on some “energy” consideration not suggested in Sandell (which might equally apply for numerous combinations of ingredients mentioned in Sandell) does not fairly address the points raised by Applicants above. For example, the Office Action overlooks the Sandell contrast of the attributes of heat extrusion with those of paste extrusion (e.g., not adding water versus using water to make an extrudable paste), overlooks that the Sandell premix components include ingredients compatible with the heat extrusion process (e.g., ingredients that soften and/or melt at elevated temperatures), and overlooks that the present claims call for a combination of sulfonamide herbicide free acid and inorganic base that meet certain quantitative limitations that are not suggested by Sandell. Accordingly, while the court in KSR found that a person having ordinary skill in the art could have combined a pedal of the type under consideration with a pedal position sensor in a fashion encompassed by the claim under consideration and would have seen the benefits in doing so (see USPQ2d at 1398), Applicants submit that it is clearly not evident how one of ordinary skill would see the benefit of picking a sulfonamide herbicide from the list of actives in Sandell and an inorganic base having a suitable pKa from the list of optional additives in Sandell and combine them using an advantageous equivalent % relationship along with sufficient water to make a suitable paste for paste extrusion. Furthermore, both the suggestion that Applicant’s methods should be carried out and an expectation of success must be found in the prior art, not Applicant’s disclosure. See In re Dow Chemical 5 USPQ 2d. 1529, 1531, 837 F2d. 1064

(Fed. Cir. 1988). Applicants submit that Sandell clearly does not suggest that paste-extruded sulfonamide herbicide compositions having both excellent water dispersibility and significantly improved spray equipment clean-out properties can be obtained by the method of Claim 1.

Applicants further submit that neither Nonomura nor Reibel et al. fairly suggest that the Sandell teachings with regard to compositions made by extruding a dry premix using a heat extrusion technique should somehow apply as well to extrusion of a water-wet paste. Applicants also submit that neither Nonomura nor Reibel et al. fairly suggest that one should pick a sulfonamide herbicide free acid from among the numerous active ingredients listed in Sandell, choose an inorganic base from the list of optional additives in Sandell and then include them in a mixture with sufficient water to produce an extrudable paste suitable for paste extrusion instead of a dry premix suitable for heat extrusion. Applicants also submit that neither Nonomura nor Reibel et al. fairly suggest that the preparation of a Sandell premix should include adding an advantageous amount of base selected from inorganic base equivalents having conjugate acid pK_a s at least 2.1 units greater than the highest pK_a of any sulfonamide herbicide free acid component which might be used in the Sandell invention.

In sum, for the reasons discussed above, Applicants submit that Claims 1-16 are patentable over Sandell, even in light of the teachings of Reibel et al. and/or Nonomura.

Moreover, each of claims 2 through 16 includes at least one limitation beyond those recited in Claim 1, and Applicants provide further basis for patentability of some of these claims as follows:

Claim 2

Claim 2 requires at least about 75 equivalent % of base. Applicants submit that this is even further distinguished than the 50 equivalent % of Claim 1 from the base use exemplified in Sandell.

Claim 3

Claim 3 requires at least about 100 equivalent % of base. Applicants submit that this is even further distinguished than the 50 equivalent % of Claim 1 and the 75 equivalent % of Claim 2 from the base use exemplified in Sandell.

Claim 8

Claim 8 addresses embodiments of Applicants' process wherein the base comprises sodium phosphate in the form of the dodecahydrate. As explained at page 7, lines 27-34 of the present application, the dodecahydrate form of sodium phosphate can be advantageously employed in Applicants' paste

extrusion process in order to avoid undesirable temperature increases due to the heat of hydration associated with adding water to anhydrous sodium phosphate. Applicants submit that although hydrates are mentioned (see column 14, line 27 of Sandell) Sandell does not provide a basis for advantageously using sodium phosphate in the dodecahydrate form, especially in the context of a process for preparing a paste-extruded sulfonamide herbicide composition. Indeed, Sandell describes a process in which no water is added, and where elevated temperatures are generally desirable.

Claims 9 and 15

Claims 9 and 15 each require a saccharide component. The Office Action indicates that Nonomura teaches saccharides as being additives to formulations used to improve plant growth and discloses the use of any polyacylpolysaccharide of polyalkylpolysaccharide and herbicides (column 8, line 47 and column 15, lines 30-33 were cited); and that it would have been obvious to combine the teachings of Sandell with those of Nonomura to further include a saccharide because saccharides are known to enhance plant growth.

Applicants note that although Nonomura indicates that the component may be applied in solid form (see column 13, line 24), formulations of components in liquid form are particularly suggested (see column 13, line 25 – column 15, line 33 and the examples). Applicants submit that Nonomura does not suggest formulation of the plant growth enhancing additives in solid paste-extruded granules that also contain herbicidal active ingredients and base. Applicants further note that enhancing plant growth can in many general agricultural settings conflict with the purpose of herbicidal application. Indeed, Nonomura recognizes the possibility that other ingredients could hinder the beneficial effects (see e.g., column 14, line 6-9) and even suggests withholding pesticidal application so as to prevent interference (see column 16, lines 45-49). Accordingly, Applicants submit that Nonomura does not fairly suggest adding the plant-growth enhancers described therein to the Sandell heat extrusion process for producing granular agricultural compositions. Moreover, Applicants submit that despite the mention of polyalkylglycosides and polyacylglycosides in Nonomura, neither Sandell nor Nonomura provides a basis for advantageously combining at least one sulfonamide free acid with at least 50 equivalent % of base (selected as indicated in Claim 1) and a saccharide as required by these claims, especially in the context of a process for preparing a paste-extruded sulfonamide herbicide composition.

Claim 12

Claim 33 involves the specific combination including sulfmeturon-methyl and sodium phosphate. Applicants submit that despite the mention of sulfmeturon-methyl as compound No. 63 at column 10 in Sandell, Sandell does not provide a basis for advantageously combining sulfmeturon-methyl with sodium phosphate as required by this claim, especially in the context of a process for preparing a paste-extruded sulfonamide herbicide composition.

Claim 13

Claim 34 involves the specific combination including thifensulfuron-methyl and sodium carbonate and (by virtue of its dependency) a disaccharide. The Office Action indicates that Sandell discloses that one or more active ingredients, including herbicides, may be used in combination with other herbicidally active ingredients, and that Reibel et al. teaches the combination of arylsulphonylureas with the sulfonamides which include thifensulfuron-methyl and tribenuron methyl in formulated pastes (column 1, lines 6-16, column 4, line 32 and column 5, lines 57 & 58 were cited). Applicants submit that despite this mention of thifensulfuron-methyl, neither Sandell nor Reibel et al. provides a basis for advantageously combining thifensulfuron-methyl with sodium carbonate as required by this claim, especially in the context of a process for preparing a paste-extruded sulfonamide herbicide composition.

Claim 14

Claim 35 involves the specific combination including tribenuron-methyl and sodium carbonate. The Office Action indicates that Sandell discloses that one or more active ingredients, including herbicides, may be used in combination with other herbicidally active ingredients; and that Reibel et al. teaches the combination of arylsulphonylureas with the sulfonamides which include thifensulfuron-methyl and tribenuron methyl in formulated pastes (column 1, lines 6-16, column 4, line 32 and column 5, lines 57 & 58 were cited). Applicants submit that despite this mention of tribenuron methyl, neither Sandell nor Reibel et al. provides a basis for advantageously combining tribenuron-methyl with sodium carbonate as required by this claim, especially in the context of a process for preparing a paste-extruded sulfonamide herbicide composition.

2. Claim 17 is not unpatentably obvious under 35 U.S.C. 103(a) in light of U.S. Patent No. 5,474,971 to Sandell.

Claim 17 relates to a paste-extruded sulfonamide herbicide composition prepared by the process of Claim 1; and Claim 1 clearly relates to a process which involves, in part, preparing a mixture which comprises amongst its claimed components sufficient water to make the mixture an extrudable paste. Applicants submit that the extrusion of a dry premix as taught in Sandell does not result in a paste-extruded composition of the type claimed in Claim 17. Applicants submit that one of ordinary skill in the art would expect the heat extruded compositions of Sandell (which are hardened after heat extrusion) likely to have different physical characteristics (e.g., porosity) from paste extruded compositions (which are dried after paste extrusion); and likely to have different chemical characteristics because of the potential for base-sulfonamide interaction in the aqueous environment used for paste extrusion but not for the Sandell heat extrusion. Moreover, although there are sulfonylurea herbicides listed among the active ingredients in Table 1 of Sandell, Applicants submit that Sandell does not fairly suggest using suitable bases in advantageous amounts relative to a sulfonamide herbicide free acid component. Indeed, as discussed above, in the examples using a sulfonamide herbicide (Examples 5 and 6), Sandell uses significantly lower amounts of the base sodium bicarbonate than the amount called for by Claim 1 (from which Claim 17 depends), and even that use is one which would be avoided in preparing a water-containing paste for paste extrusion. Accordingly, Applicants submit that Sandell does not disclose or fairly suggest paste-extruded sulfonamide herbicide compositions of the type claimed in Claim 17.

3. Claim 18 particularly points out and distinctly claims an invention as required by 35 U.S.C. 112, second paragraph.

Claim 18 clearly relates to a composition comprising an extruded component prepared using the process of Claim 1, and further clearly indicates that the composition comprises one or more active ingredients that are not sulfonamide herbicides. The Office Action suggested that the limitation “one or more active ingredients that are not sulfonamide herbicides” is indefinite because the claim requires a sulfonamide herbicide; and that for the purpose of examination, Claim 18 was treated as comprising any active ingredient. It appears that the Office Action recognizes the requirement of a sulfonamide

herbicide, but does not recognize that the compositions disclosed in this application can contain, in addition, non-sulfonamide herbicides. Applicants submit that the compositions of Claim 18 clearly contain a sulfonamide herbicide by virtue of their comprising an extruded component prepared using the process of Claim 1, and also clearly contain one or more active ingredients that are not sulfonamide herbicides. In other words, Applicants submit that one of ordinary skill in the art would recognize that rather than merely containing “any active ingredient” the compositions of Claim 18 contain multiple actives, at least one of which is a sulfonamide herbicide and at least one of which is not.

4. Claims 18-37 are not unpatentably obvious under 35 U.S.C. 103(a) when considering U.S. Patent No. 5,474,971 to Sandell in view of U.S. Patent No. 5,741,157 to Sandell et al.

Applicants have discussed Sandell in Section 1 of the Argument above, and incorporate that discussion by reference in this Section 4. By way of summary, Applicants submit as further discussed above:

(a) Sandell’s mention of extrusion of a water-wet paste cited in the Office Action is, like Sandell’s mention of various other granule preparation methods in the context of contrasting them to the heat extrusion presented therein;

(b) one skilled in the art would clearly recognize that the premix characteristics presented in Sandell (and the embodiments thereof described therein) relate to a premix specifically designed for the heat extrusion process described therein, and that Sandell does not suggest that the premix is considered suitable for other processes, especially other processes which are not “dry” processes such as water-spraying in a fluidized bed or pan granulation equipment, spray-drying and extrusion of a water-wet paste;

(c) Sandell does not generally teach that one should choose the optional additives cited in the Office Action when the active ingredient is a sulfonamide herbicide acid;

(d) the examples (examples 5 and 6) in Sandell which use the sulfonylurea metsulfuron-methyl and sodium bicarbonate contain significantly lower “equivalents” of sodium bicarbonate called for by Claim 1 and represent a use of sodium bicarbonate which would be avoided in the preparation of water-containing paste for paste extrusion.

The Office Action, referencing KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007), again suggests that it would have been obvious to try adding water to soften the paste instead of heating it since it would require less

energy than heating and is a common method of extrusion. As indicated above, Applicants submit this bare assertion clearly does not fairly analyze the motivations with regard to formulation. For example, even with regard to energy considerations, Applicants note that the present process for preparing a paste-extruded sulfonamide composition includes drying the extrudate, an aspect that can itself require considerable energy (see page 30, lines 6-18). Indeed, Sandell points out that wet-extrusion requires a drying step (e.g., at column 4, line 2) and that the advantages of the Sandell process include no need for drying (e.g., at column 4, line 14). Moreover, it is impermissible within the framework of Section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. See In re Wesslau 147 USPQ 391, 393, 353 F2d 238 (CCPA 1965) and Bauch & Lomb v. Barnes-Hind/Hydrocurve, Inc. 230 USPQ 416, 796 F2d 443 (Fed. Cir. 1986). In this instance, the bare assertion of obviousness in the Office Action base on some “energy” consideration not suggested in Sandell (which might equally apply for numerous combinations of ingredients mentioned in Sandell) does not fairly address the points raised by Applicants above. For example, the Office Action overlooks the Sandell contrast of the attributes of heat extrusion with those of paste extrusion (e.g., not adding water versus using water to make an extrudable paste), overlooks that the Sandell premix components include ingredients compatible with the heat extrusion process (e.g., ingredients that soften and/or melt at elevated temperatures), and overlooks that the present claims call for a combination of sulfonamide herbicide free acid and inorganic base that meet certain quantitative limitations that are not suggested by Sandell. Accordingly, while the court in KSR found that a person having ordinary skill in the art could have combined a pedal of the type under consideration with a pedal position sensor in a fashion encompassed by the claim under consideration and would have seen the benefits in doing so (see USPQ2d at 1398), Applicants submit that it is clearly not evident how one of ordinary skill would see the benefit of picking a sulfonamide herbicide from the list of actives in Sandell and an inorganic base having a suitable pKa from the list of optional additives in Sandell and combine them using an advantageous equivalent % relationship along with sufficient water to make a suitable paste for paste extrusion. Furthermore, both the suggestion that Applicant’s methods should be carried out and an expectation of success must be found in the prior art, not Applicant’s disclosure. See In re Dow Chemical 5 USPQ 2d. 1529, 1531, 837 F2d. 1064 (Fed. Cir. 1988). Applicants submit that Sandell clearly

does not suggest that paste-extruded sulfonamide herbicide compositions having both excellent water dispersibility and significantly improved spray equipment clean-out properties can be obtained by the method of Claim 1.

The Office Action indicates that Sandell does not teach the sulfonamides thifensulfuron-methyl and tribenuron-methyl, and does not disclose the addition of a saccharide, particularly a disaccharide; and that it is for these reasons that Sandell et al. was joined. Accordingly, the Office Action does not assert that the Sandell et al. disclosure addresses the points raised above so that one of ordinary skill in the art would somehow find the Claim 1 process obvious when considering Sandell and in further view of Sandell et al.. Inasmuch as each of claims 18 through 37 includes at least one limitation beyond the applicable distinctions (a) through (d) as applied to Claim 1, and the reasons that Sandell et al. was joined do not apply to Claim 1, Applicants submit that these claims should be found patentable simply for the reasons discussed above that Claim 1 is patentable over Sandell. Nevertheless, Applicants further note that Sandell et al. also recognizes extrusion of water-wet paste as one of the methods that are different from the heat extrusion process described in Sandell et al. (see e.g., column 2, line 55 – column 3, line 4); and that paste extrusion requires a drying step (see column 2, line 65) while the advantages of noneffervescent heat-extruded granular compositions described in Sandell et al. include their method of production which is nonaqueous and requires no drying step (see column 7, lines 10-16). Applicants also submit that one skilled in the art would clearly recognize that the premix characteristics presented in Sandell et al. (and the embodiments thereof described therein) relate to a premix specifically designed for the heat extrusion process described therein, and that Sandell does not suggest that the premix is considered suitable for other processes, especially other processes which are not “dry” processes such as water-spraying in a fluidized bed or pan granulation equipment, spray-drying and extrusion of a water-wet paste. More particularly, Sandell et al. compositions involve a urea and a urea modifier which in combination with the urea forms an extrusion aid which allows extrusion to take place at temperatures much below the melting point of pure urea (see e.g., column 2, lines 26-30). Accordingly, Applicants note that although there are examples actually involving inorganic base and sulfonamide herbicides, these examples all involve premixes that include urea and urea modifiers (as themselves and/or as part of preblends), a combination which one of ordinary skill would recognize from Sandell et al. as formulated for the Sandell et al. heat extrusion process.

Furthermore, Applicants note that the heat extrusion processes of Sandell and Sandell et al. both involve ingredients that soften and/or melt at elevated temperatures (see e.g., column 13, lines 13-58 in Sandell and column 5, lines 20-28 & 49-52 in Sandell et al.) and generally involves cooling and hardening (see e.g., column 5, line 2 in Sandell and column 3, lines 40-45 in Sandell et al.). Applicants submit that this interaction of diluent, binder and/or extrusion aid with any other ingredients (including actives) during heat extrusion clearly results in a product having attributes derived from that process.

In sum, for the reasons discussed above, Applicants submit that Claims 18-37 are patentable over Sandell, even in light of the teachings of Sandell et al.

Moreover, each of claims 18 through 37 includes at least one limitation beyond the applicable distinctions (a) through (d) as applied to Claim 1, and Applicants provide further basis for patentability of some of these claims as follows:

Claim 18.

Claim 18, as discussed in Section 3 of the Argument above, requires inter alia multiple actives, at least one of which is a sulfonamide herbicide and at least one of which is not. Although both Sandell and Sandell et al. provide compositions that can have one or more active ingredients (a mixture of two active ingredients is noted at column 2, lines 7-8 in Sandell et al.) Applicants submit that the combination of Claim 18 is not fairly suggested by Sandell and/or Sandell et al. Applicants submit that one of ordinary skill in the art would expect the heat extruded compositions of Sandell and Sandell et al. (which are hardened after heat extrusion) likely to have different physical characteristics (e.g., porosity) from the paste extruded compositions produced by the present claims (which are dried after paste extrusion); and likely to have different chemical characteristics because of the potential for base-sulfonamide interaction in the aqueous environment used for paste extrusion according to the present claims but not for the Sandell and Sandell et al. heat extrusions.

Claim 26

Claim 26 addresses embodiments of Applicants' process wherein the base comprises sodium phosphate in the form of the dodecahydrate. As explained at page 7, lines 27-34 of the present application, the dodecahydrate form of sodium phosphate can be advantageously employed in Applicants' paste extrusion process in order to avoid undesirable temperature increases due to the heat of hydration associated with adding water to anhydrous sodium phosphate. Applicants submit that although hydrates are mentioned (see column 14, line 27 of Sandell and column 6, line 53 of Sandell et al.) neither Sandell nor Sandell et

al. provides a basis for advantageously using sodium phosphate in the dodecahydrate form, especially in the context of a process for preparing a paste-extruded sulfonamide herbicide composition. Indeed, Sandell describes a process in which no water is added, Sandell et al. also describes a nonaqueous process, and both Sandell and Sandell et al. describe processes where elevated temperatures are generally desirable.

Claims 27, 28 and 32

Claims 27, 28 and 32 each require a saccharide component (Claim 32 specifically a disaccharide). The Office Action indicates that the disaccharide lactose is taught in Sandell et al. as a water soluble diluent which dissolves rapidly in water (column 6, line 65 – column 7, line 3 was noted). Applicants note that the mention of lactose at column 7, line 3 is as one of numerous non-limiting examples of one of several optional types of additives that might (or presumably might not) be used in formulating the agricultural compositions made by the Sandell et al. heat extrusion process. Applicants submit that despite this mention of lactose, neither Sandell nor Sandell et al. provides a basis for advantageously combining at least one sulfonamide free acid with at least 50 equivalent % of base (selected as indicated in Claim 1) and a saccharide as required by these claims, especially in the context of a process for preparing a paste-extruded sulfonamide herbicide composition.

Claim 30

Claim 30 relates to a paste-extruded sulfonamide herbicide composition prepared by the process of Claim 19. Applicants submit that one of ordinary skill in the art would expect the heat extruded compositions of Sandell and Sandell et al. (which are hardened after heat extrusion) likely to have different physical characteristics (e.g., porosity) from the paste extruded compositions produced by the present claims (which are dried after paste extrusion); and likely to have different chemical characteristics because of the potential for base-sulfonamide interaction in the aqueous environment used for paste extrusion according to the present claims but not for the Sandell and Sandell et al. heat extrusions.

Claim 33.

Claim 33 involves the specific combination including sulfometuron-methyl and sodium phosphate and (by virtue of its dependency) a disaccharide. The Office Action indicates that the disaccharide lactose is taught in Sandell et al. as a water soluble diluent which dissolves rapidly in water (column 6, line 65 – column 7, line 3 was noted); and that Sandell et al. teaches compositions comprising one or more additives selected from sulfonylurea class of herbicides including sulfometuron-methyl, thifensulfuron methyl and tribenuron methyl

(column 2, lines 15-17; column 4 lines 10-12; and examples 14, 15, 20 and 21 were noted). Applicants submit that despite this mention of lactose and sulfometuron-methyl, neither Sandell nor Sandell et al. provides a basis for advantageously combining sulfometuron-methyl with sodium phosphate and a disaccharide as required by this claim, especially in the context of a process for preparing a paste-extruded sulfonamide herbicide composition.

Claim 34.

Claim 34 involves the specific combination including thifensulfuron methyl and sodium carbonate and (by virtue of its dependency) a disaccharide. The Office Action indicates that the disaccharide lactose is taught in Sandell et al. as a water soluble diluent which dissolves rapidly in water (column 6, line 65 – column 7, line 3 was noted); and that Sandell et al. teaches compositions comprising one or more additives selected from sulfonylurea class of herbicides including sulfometuron-methyl, thifensulfuron methyl and tribenuron methyl (column 2, lines 15-17; column 4 lines 10-12; and examples 14, 15, 20 and 21 were noted). Applicants submit that despite this mention of lactose and thifensulfuron methyl, neither Sandell nor Sandell et al. provides a basis for advantageously combining thifensulfuron methyl with sodium carbonate and a disaccharide as required by this claim, especially in the context of a process for preparing a paste-extruded sulfonamide herbicide composition.

Claim 35.

Claim 35 involves the specific combination including tribenuron-methyl and sodium carbonate and (by virtue of its dependency) a disaccharide. The Office Action indicates that the disaccharide lactose is taught in Sandell et al. as a water soluble diluent which dissolves rapidly in water (column 6, line 65 – column 7, line 3 was noted); and that Sandell et al. teaches compositions comprising one or more additives selected from sulfonylurea class of herbicides including sulfometuron-methyl, thifensulfuron methyl and tribenuron methyl (column 2, lines 15-17; column 4 lines 10-12; and examples 14, 15, 20 and 21 were noted). Applicants submit that despite this mention of lactose and tribenuron methyl, neither Sandell nor Sandell et al. provides a basis for advantageously combining tribenuron-methyl with sodium carbonate and a disaccharide as required by this claim, especially in the context of a process for preparing a paste-extruded sulfonamide herbicide composition.

CONCLUSION

Applicants have disclosed and claimed in each of claims 1 through 37 an invention which specifically involves a process for producing a paste-extruded

sulfonamide composition that has advantageous properties (or a composition including a paste-extruded sulfonamide composition produced by such process). Applicants submit that each of these claims distinctly recites an invention which is not fairly suggested by the art applied by the Examiner. A decision reversing the Examiner's rejections and holding each of these claims allowable is respectfully solicited.

Respectfully submitted,

/David E. Heiser/

DAVID E. HEISER
ATTORNEY FOR APPLICANTS
Registration No.: 31,366
Telephone: (302) 892-1926
Facsimile: (302) 892-7949

Dated: Monday, November 24, 2008

CLAIMS APPENDIX

1. A process for preparing a paste-extruded sulfonamide herbicide composition comprising
 - (a) preparing a mixture comprising
 - (i) from 2 to 90% by weight on a water-free basis of one or more active ingredients comprising at least one sulfonamide herbicide free acid;
 - (ii) from 0 to 95% by weight on a water-free basis of one or more additives selected from the group consisting of wetting agents, dispersants, lubricants, anticaking agents, chemical stabilizers and diluents; and
 - (iii) at least about 50 equivalent % of base selected from inorganic base equivalents having conjugate acid pK_a s at least 2.1 units greater than the highest pK_a of the sulfonamide herbicide free acid component; the sum of the weight percents of all the ingredients in the mixture totaling 100% on a water-free basis; and
 - (iv) sufficient water to make the mixture an extrudable paste;
 - (b) extruding the mixture prepared in (a) through a die or screen to form extrudate; and
 - (c) drying the extrudate.
2. The process of Claim 1 wherein the mixture comprises at least about 75 equivalent % of base.

3. The process of Claim 2 wherein the mixture comprises at least about 100 equivalent % of base.
4. The process of Claim 1 wherein the base comprises an inorganic base selected from the group consisting of sodium hydrogen carbonate, sodium carbonate, sodium hydrogen phosphate, sodium phosphate, potassium hydrogen carbonate, potassium carbonate, potassium hydrogen phosphate and potassium phosphate.
5. The process of Claim 4 wherein the base comprises an inorganic base selected from the group consisting of sodium carbonate, sodium phosphate, potassium carbonate and potassium phosphate.
6. The process of Claim 5 wherein the base comprises sodium carbonate.
7. The process of Claim 5 wherein the base comprises sodium phosphate.
8. The process of Claim 7 wherein the sodium phosphate is in the form of the dodecahydrate.
9. The process of Claim 1 wherein the mixture comprises from about 0.5 to about 50% by weight of a saccharide on a water-free basis.
10. The process of Claim 1 wherein at least one sulfonamide herbicide free acid is selected from the group consisting of amidosulfuron, azimsulfuron, bensulfuron-methyl, chlorimuron-ethyl, chlorsulfuron, cinosulfuron, cyclosulfamuron, ethametsulfuron-methyl, ethoxysulfuron, flupyrsulfuron-

methyl, flazasulfuron, foramsulfuron, halosulfuron-methyl, imazosulfuron, iodosulfuron-methyl, mesosulfuron-methyl, metsulfuron-methyl, nicosulfuron, oxasulfuron, primisulfuron-methyl, prosulfuron, pyrazosulfuron-ethyl, rimsulfuron, sulfometuron-methyl, sulfosulfuron, thifensulfuron-methyl, triasulfuron, tribenuron-methyl, trifloxysulfuron, triflusulfuron-methyl, tritosulfuron, cloransulam-methyl, diclosulam, florasulam, flumetsulam, metosulam and penoxsulam.

11. The process of Claim 10 wherein at least one sulfonamide herbicide free acid is selected from the group consisting of azimsulfuron, bensulfuron-methyl, chlorimuron-ethyl, chlorsulfuron, ethametsulfuron-methyl, flupyrsulfuron-methyl, metsulfuron-methyl, nicosulfuron, rimsulfuron, sulfometuron-methyl, thifensulfuron-methyl, tribenuron-methyl and triflusulfuron-methyl.

12. The process of Claim 1 wherein at least one sulfonamide herbicide free acid is sulfometuron-methyl and the base comprises sodium phosphate.

13. The process of Claim 1 wherein at least one sulfonamide herbicide free acid is thifensulfuron-methyl and the base comprises sodium carbonate.

14. The process of Claim 1 wherein at least one sulfonamide herbicide free acid is tribenuron-methyl and the base comprises sodium carbonate.

15. The process of Claim 1 wherein in (a) sufficient water to make an extrudable paste is added to a solid composition comprising from 2 to 90% by

weight on a water-free basis of one or more active ingredients comprising at least one sulfonamide herbicide free acid, from 0.5 to 94% by weight on a water-free basis of a saccharide, from 1 to 20% by weight on a water-free basis of a surfactant component, at least about 50 equivalent % of base selected from inorganic base equivalents having conjugate acid pK_a s at least 2.1 units greater than the highest pK_a of the sulfonamide herbicide free acid component, and optionally other ingredients; the sum of the weight % of all the ingredients in the solid composition totaling 100% of a water-free basis; and at least 10% of the sulfonamide herbicide content in the solid composition being in free acid form.

16. The process of Claim 1 further comprising a step of sifting the dried extrudate.

17. A paste-extruded sulfonamide herbicide composition prepared by the process of Claim 1.

18. A composition comprising an extruded component prepared using the process of Claim 1; wherein said composition comprises one or more active ingredients that are not sulfonamide herbicides.

19. The process of Claim 1 wherein at least one sulfonamide herbicide free acid is selected from the group consisting of amidosulfuron, azimsulfuron, bensulfuron-methyl, chlorimuron-ethyl, chlorsulfuron, cinosulfuron, cyclosulfamuron, ethametsulfuron-methyl, ethoxysulfuron, flupyralsulfuron-methyl, flazasulfuron, foramsulfuron, halosulfuron-methyl, imazosulfuron,

iodosulfuron-methyl, mesosulfuron-methyl, nicosulfuron, oxasulfuron, primisulfuron-methyl, prosulfuron, pyrazosulfuron-ethyl, rimsulfuron, sulfometuron-methyl, sulfosulfuron, thifensulfuron-methyl, triasulfuron, tribenuron-methyl, trifloxysulfuron, triflusulfuron-methyl, tritosulfuron, cloransulam-methyl, diclosulam, florasulam, flumetsulam, metosulam and penoxsulam.

20. The process of Claim 19 wherein the mixture comprises at least about 75 equivalent % of base.

21. The process of Claim 20 wherein the mixture comprises at least about 100 equivalent % of base.

22. The process of Claim 19 wherein the base comprises an inorganic base selected from the group consisting of sodium hydrogen carbonate, sodium carbonate, sodium hydrogen phosphate, sodium phosphate, potassium hydrogen carbonate, potassium carbonate, potassium hydrogen phosphate and potassium phosphate.

23. The process of Claim 22 wherein the base comprises an inorganic base selected from the group consisting of sodium carbonate, sodium phosphate, potassium carbonate and potassium phosphate.

24. The process of Claim 23 wherein the base comprises sodium carbonate.

25. The process of Claim 23 wherein the base comprises sodium phosphate.
26. The process of Claim 25 wherein the sodium phosphate is in the form of the dodecahydrate.
27. The process of Claim 19 wherein the mixture comprises from about 0.5 to about 50% by weight of a saccharide on a water-free basis.
28. The process of Claim 19 wherein in (a) sufficient water to make an extrudable paste is added to a solid composition comprising from 2 to 90% by weight on a water-free basis of one or more active ingredients comprising at least one sulfonamide herbicide free acid, from 0.5 to 94% by weight on a water-free basis of a saccharide, from 1 to 20% by weight on a water-free basis of surfactant component, at least about 50 equivalent % of base selected from inorganic base equivalents having conjugate acid pK_a s at least 2.1 units greater than the highest pK_a of the sulfonamide herbicide free acid component, and optionally other ingredients; the sum of the weight % of all the ingredients in the solid composition totaling 100% of a water-free basis; and at least 10% of the sulfonamide herbicide content in the solid composition being in free acid form.
29. The process of Claim 19 further comprising a step of sifting the dried extrudate.
30. A paste-extruded sulfonamide herbicide composition prepared by the process of Claim 19.

31. The process of Claim 1 wherein the base comprises an inorganic base selected from the group consisting of sodium hydrogen carbonate, sodium hydrogen phosphate, sodium phosphate, potassium hydrogen carbonate, potassium carbonate, potassium hydrogen phosphate, potassium phosphate, sodium pyrophosphate, sodium tripolyphosphate, sodium trisilicate, sodium trimetaphosphate, sodium hexametaphosphate, sodium polyphosphate, ammonium hydrogen phosphate, lithium oxide, lithium hydroxide, lithium carbonate, sodium hydroxide, lithium phosphate, lithium metasilicate, lithium orthosilicate, potassium hydroxide, sodium metasilicate, sodium orthosilicate, and potassium pyrophosphate;

32. The process of Claim 1 wherein the mixture comprises from about 0.5 to about 50% by weight of a disaccharide on a water-free basis.

33. The process of Claim 32 wherein at least one sulfonamide herbicide free acid is sulfometuron-methyl and the base comprises sodium phosphate.

34. The process of Claim 32 wherein at least one sulfonamide herbicide free acid is thifensulfuron-methyl and the base comprises sodium carbonate.

35. The process of Claim 32 wherein at least one sulfonamide herbicide free acid is tribenuron-methyl and the base comprises sodium carbonate.

36. The process of Claim 1 wherein the mixture comprises two or more active ingredients.

37. The composition of Claim 17 wherein at least one sulfonamide herbicide free acid is selected from the group consisting of amidosulfuron, azimsulfuron, bensulfuron-methyl, chlorimuron-ethyl, chlorsulfuron, cinosulfuron, cyclosulfamuron, ethametsulfuron-methyl, ethoxysulfuron, flupyrsulfuron-methyl, flazasulfuron, foramsulfuron, halosulfuron-methyl, imazosulfuron, iodosulfuron-methyl, mesosulfuron-methyl, nicosulfuron, oxasulfuron, primisulfuron-methyl, prosulfuron, pyrazosulfuron-ethyl, rimsulfuron, sulfometuron-methyl, sulfosulfuron, thifensulfuron-methyl, triasulfuron, tribenuron-methyl, trifloxysulfuron, triflusulfuron-methyl, tritosulfuron, cloransulam-methyl, diclosulam, florasulam, flumetsulam, metosulam and penoxsulam..

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE